OIPE JC124
DEC 1 3 2004
PATENT & TRADEMARK OFFICE

IFW

AF

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appl. No.	:	09/653,888
Applicant	:	Cofino et al.
Filed	:	9/1/2000
TC/AU	:	3625
Examiner	:	Rhode, Rob
Docket No.	:	YOR920000607US1
Title	:	BUSINESS METHOD FOR VISUALLY ANALYZING CLICKSTREAM DATA WITH A PARALLEL COORDINATE SYSTEM

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S APPEAL BRIEF

Sir:

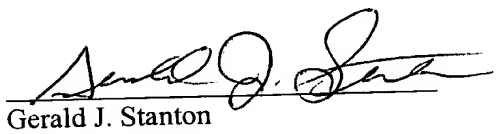
Commensurate with the NOTICE OF APPEAL filed on September 22nd, 2004, Applicant/Appellant hereby submits this APPEAL BRIEF to the Board of Patent Appeals and Interferences (hereinafter, the Board) under 37 C.F.R. 1.192 and M.P.E.P. § 1206. This BRIEF is filed within three months from the filing date of the above-cited NOTICE. Applicant/Appellant hereby petitions for a one-month extension of time, and a draft in the amount of $110 [per 37 CFR 1.17(a)(1)] is included. Should the undersigned be mistaken, please consider this also a petition for any further extension of time under 37 C.F.R. § 1.136(a) or (b) necessary to make this Appeal Brief of record. The Office is authorized to debit Deposit Account No. 50-0510 for the fee under 37 CFR 1.17(c) for the appeal brief, and for any additional extension fees as appropriate.

12/15/2004 EFLORES 00000008 500510 09653888
01 FC:1251 10.00 DA 110.00 OP

Office Action of July 14, 2004, and further that the Board rule that the pending claims are patentable over the cited art.

Respectfully submitted:

HARRINGTON & SMITH, LLP



December 8, 2004
Date

Gerald J. Stanton
Reg. No.: 46,008

Harrington & Smith, LLP
4 Research Drive
Shelton, CT 06484-6212
(203) 925-9400

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

December 8, 2004
Date

Ann Okrentowich

(1) REAL PARTY IN INTEREST

The real party in interest (RPI) is International Business Machines Corporation of Armonk, New York, to which the present application has been assigned by the inventors on July 21 and 24, 2000. That assignment has been recorded on July 27, 2000 with the U.S. Patent Office.

(2) RELATED APPEALS AND INTERFERENCES

There are no other pending appeals or interferences of which the undersigned representative and Applicant/Appellant is aware that will directly affect, be directly affected by or have a bearing on the Board's decision in this appeal.

(3) STATUS OF CLAIMS

Claims 1, 3-9, 11-20 and 22-36 are pending in this appeal, and are reproduced in Appendix A accompanying this Brief as those claims stood finally rejected by an Office Action dated July 14, 2004.

During prosecution of the original application (filed on September 1, 2000 with twenty-one claims) from which this RCE application derives, an amendment filed on November 25, 2003 changed claim 1 to recite that a micro-conversion comprises a shopper's conversion of one shopping step to another, and that a first visualization comprises at least three axes and at least one line intersects less than all of the axes. That amendment further added claims 22-36, of which independent claim 22 recites that a line intersects axes representing shopping steps and terminates prior to intersecting all axes; and independent claim 30 recites a system that provides a graphical display comprising axes and a line that crosses less than all of the axes.

A Final Office Action dated January 21, 2004 finally rejected all claims and asserted a provisional non-statutory double-patenting rejection in view of co-owned and co-pending U.S. Application No. 09/654,202. An Amendment After Final Rejection, entered by an Advisory Action dated April 29, 2004, recited the Applicant/Appellant's intention to overcome the double-patenting rejection by terminal disclaimer when such rejection becomes non-provisional, and made argument but no claims changes.

Those finally rejected claims were presented again without amendment on May 21, 2004 in a Request for Continuing Examination. A (post-RCE) Final Office Action dated July 14, 2004 again rejected all claims over combinations of Wenig (U.S. Pat. No. 6,286,030 B1), Yaginuma (U.S. Pat. No. 6,477,538 B1) and Hunt (U.S. pat. No. 6,223,215 B1). The undersigned engaged in a teleconference with the Examiner and his supervisor on July 22, 2004, which included drawings provided to the Examiner and reproduced here as Appendix B. The Applicant/Appellant further filed an Amendment After Final dated August 20, 2004, which included an interview summary and argument, but no claim amendments. An Advisory Action dated September 10, 2004 rejected entry of that Amendment After Final, leaving rejected claims 1, 3-9, 11-20, and 22-36 as presented in the May 21, 2004 RCE. The claims as finally rejected are reproduced in Appendix A attached hereto.

(4) STATUS OF AMENDMENTS

No amendment to the claims was proposed or entered subsequent to the (post-RCE) final Office Action dated July 14, 2004.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is in the context of graphical representations of web data, such as a plurality of users' activity in shopping at an online store. Specifically, the present application describes an interactive parallel coordinate system that can be used to explore clickstream data, which is a collection of web pages selected by a user in a single session. Clickstream data, and its graphical representation, may refer to one or multiple users and sessions. In a preferred embodiment, the axes of a parallel coordinate system are used to represent shopping steps. Exemplary shopping steps represented by axes include product view pages, shopping basket page, and purchase completion page, as shown in Appendix B. A clickstream of a shopping session is represented as a polygonal line that intersects the appropriate axes visited by the user in a particular session. Multiple similar sessions by different users may also be combined into a single polygonal line.

Where the final (generally rightmost) axis represents purchase completion, sessions ending without a purchase are represented by a polygonal line that terminates at an axis prior to that final axis. A line representing a session that does not intersect all axes of the display is herein termed for brevity as exhibiting a "drop-out". Appendix B reveals drop-outs for polygonal lines 808, 812 and 813 at the axis labeled "804 Basket Placement"; for line 809 at the axis labeled "802 Product Impressions"; and for line 810 at the axis labeled " 803 Click-Throughs". Graphically representing these drop-outs is particularly valuable so that analysts and operators of on-line stores may readily see graphically at what point sessions (and users) leave their site, to isolate and identify lost potential sales. Further aspects include the display being dynamic, so that reviewers may filter, sample, cluster, color code, and query, with the results of those actions being dynamically displayed in a graphical representation. A categorizer axis is also disclosed to enable the graphical

display to illustrate service providers or referring websites from which sessions are initiated. The categorizer axis 801 of Appendix B shows two such referrers 806 and 807.

Of the independent claims 1, 23, and 30, claim 1 is drawn to a method of graphically representing clickstream data; claim 23 is drawn to a method of doing business on a network that comprises providing a user with a means to visualize a graphical representation of a virtual path; and claim 30 is drawn to a system that provides a service to a customer that comprising providing a graphical display of clickstream data.

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 4-7, 9, 11-12, 14-20 and 22-36 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Wenig (U.S. Pat. No. 6,286,030 B1) and Yaginuma U.S. Pat. No. 6,477,538 B1).

B. Claims 3, 8, and 13 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Wenig, Yaginuma, and Hunt (U.S. Pat. No. 6,223,215 B1).

(7) ARGUMENT

Below are separately argued seven different groupings of claims. Claims within a grouping stand or fall together as to that group only.

ISSUE A. OBVIOUSNESS OF CLAIMS 1, 4-7, 9, 11-12, 14-20 AND 22-36 BY WENIG AND YAGINUMA:

Part A1: As to Claims 1, 23 and 30, no combination of references teaches or suggests a graphical representation comprising axes that represent steps or points along a virtual path/shopping session and a line that represents the virtual path that does not intersect all axes.

Claim 1 (drawn to a method) recites in relevant part: "... one or more lines that each correspond to at least one said shopping session, at least one of the one or more lines intersecting less than all of the axes...". Claim 23 (also drawn to a method) recites in relevant part "the line terminating prior to intersecting all of the axes", and claim 30 (drawn to a system) recites in relevant part "a line ... plotted against the axes but that crosses less than all of the axes." All other claims depend from either claim 1, 23 or 30, and stand or fall with their independent claim as to Issue A, Part A1.

As an overview, the abstract of Wenig recites that it is directed to a system and method that captures transmissions during a user session between a client and server. Requests from a client and responses by the server are captured and stored, which an analyzer may use to recreate the user session. The detailed description of Wenig teaches at col. 5, lines 25-30 that the user session is recreated by generating *the identical screens* that were viewed by the user (emphasis added). Alternative embodiments are seen to describe the various screens being generated offline or near real-time (col. 5, lines 33-39). Wenig's teaching relevant to visually recreating a user session appears limited to repeating the sequence of actual web pages visited (Wenig, col. 5, lines 14-18; 25-29), with the possible addition of environmental data such as traffic volume (col. 5, line 66 to col. 6, line 9).

While Wenig does include teachings respecting storing requests and responses between a client and a server (col. 1, lines 44-48), the Examiner concedes at page 4 of the Office Action that Wenig does not specifically disclose or teach graphically representing clickstream data as recited in claim 1. The stated advantages of an analyst determining how a client moves through an application and isolating errors as in col. 5, lines 1-18 are not seen to suggest any embodiments other than recreating the screens or webpages *exactly as visited* during a user session. Thus, Wenig is not seen to provide teachings that are particularly relevant to the claimed multi-axis display or to lines crossing those axes.

The abstract of Yaginuma describes an apparatus and method for displaying the results of a data mining process as multi-dimensional data, such as on a parallel coordinate axis. A user interface generates an axis of the display corresponding to the result of the data mining process, adds the axis to the parallel coordinate axis and displays the result of the data mining process on the added axis.

The final rejection of claims 1, 23 and 30 is premised explicitly on Yaginuma's Figures 19, 21 and 32 showing a dropout, where the polygonal data line intersects less than all axes of the parallel coordinate display. Appendix C separately plots the underlying data entries of Yaginuma's Figure 32 (presented at Figure 27), and objectively shows that there are no dropouts. Figures 19 and 21 do not add to the teachings of Figure 32, and the text notes no substantive distinction between them. The Applicant/Appellant asserts that Appendix C overcomes the Patent Office's prima facie case for obviousness by showing that the premise underlying the rejection is false, so the rejection must fail absent contrary rebutal evidence from the Patent Office. No such rebuttal evidence has been offered.

Yaginuma is now characterized in total. This reference provides numerous drawings that the undersigned broadly categorizes into three groups: automobile specifications (figures 6-7, 12, 45-47), groceries (figures 27, 29, 32-33), and industry classifications (figures 34, 35, 37, 40, 42). [The text related to Figures 48-51 does not appear to identify specific underlying data]. Each of these appears to be displays of non-sequential data points in a static database that are independent of one another. Yaginuma teaches displaying the *same* number of coordinate axes as fields detected (col. 6, lines 43-45); searching the entire record and obtaining values for *each* field (col. 6, lines 49-50); and connecting the data points with a line (col. 7, lines 1-2) (emphases added). These are explicit teachings away from a drop-out: the axes represent search criteria for all data returned from the search, so Yaginuma's displayed data *necessarily* satisfies each and every search criteria. Data not satisfying each search criteria is never returned from the database search.

Respecting Yaginuma's display of automobile specifications, each axis of the parallel coordinate system represents search criteria (e.g., horsepower, weight, year, country), so that any polygonal line crossing the axes (and representing a particular automobile model) necessarily crosses *all* axes. This is because any model not intersecting an axis is not returned by the data mining engine; it fails one or more of the search criteria and is not returned for display. Respecting the groceries, the underlying data for Figures 29 and 32-33 is tabulated at Figure 27 (large table), as recited at Yaginuma col. 15, lines 37-64 and col. 16, lines 35-45 (wherein the text indicates that the flowcharts of the intervening figures operate to create the parallel coordinate displays from the underlying data). Exhibit C graphs each of the Yaginuma data entries separately, based on the tabulated data of Figure 27. No drop-outs are evident. Respecting the industry classification, no

underlying data is enumerated, the associated text describes color-coding and selecting displayed lines, and no polygonal line is seen to intersect less than all axes of the display.

Every example of Yaginuma is seen to teach that the axes of the parallel coordinate display represent search criteria used in the data mining process, so that all data retrieved by the search are displayed as a line that necessarily intersects each parallel axis of the display. Yaginuma's examples relating to automobile data appear to clearly represent that the parallel coordinate axes are search criteria, so only data satisfying each and every search criteria (e.g., that would cross every axis when plotted) is returned from a search of the underlying database.

Yaginuma's examples relating to groceries imposes rule number, support, and degree of confidence axes in addition to the data points. As cited in the text at col. 15, lines 17-30, 'support value' and 'degree of confidence' show correlation between people who buy bread and butter and people who buy milk and jam. The 'rule number' corresponds to a combination between 'condition' (e.g., bread, butter) and 'result' (e.g., milk, jam). It is seen to be inherent in Yaginuma's teaching that only lines that intersect all axes of the display, including the additional 'rule number', 'support', and 'degree of confidence' axes that are not separately listed in the underlying data but added by Yaginuma in Figure 29. This is true at least because any polygonal line that would purportedly drop-out would necessarily exhibit a support or degree of confidence of zero, and therefore would not be displayed; data with zero confidence of correlation is not returned from the Yaginuma search.

For example, assume there is no correlation between people who buy bread and butter and people who buy milk and jam. Yaginuma would not display that data for the simple fact that there is no correlation and therefore no polygonal line to plot, just as there is no line in Yaginuma's Figure 29 showing a correlation between people who buy butter and milk and people who buy paper diapers and jam. Where the correlation (support or degree of confidence) of a searched condition/result pairing is zero, no polygonal line is plotted because there is no association between condition and result, and therefore no line that would connect them that could later drop out. Where the correlation of a searched condition/result pairing is greater than zero, any line must necessarily intersect all axes of the Yaginuma display, because their correlation is non-zero by the very existence of the line.

Whereas Yaginuma's description of the data underlying the industry classification displays is less clear, these also appear limited only to displaying polygonal lines that intersect all parallel coordinate axes. Taking Figure 34 as an example, it appears that any country whose ratio of primary, secondary, or tertiary industry is zero would not be displayed. It is reasonable to assume that the database underlying the search that results in Yaginuma's Figure 34 includes more than the six displayed countries. The fact that Yaginuma mines data reveals that only some data is displayed, not the entire database. If, for example, Korea is within the underlying database but has a zero value for ratio of tertiary industry, Korea is not displayed because it is not returned from a database search. Just as with the automobile examples, the ratio of industry axes represent search criteria. The 'cluster 1' axis clusters different polygonal lines that are already graphed; those clustered lines must satisfy every search criteria and be returned from the database search before being clustered.

Hunt is not seen to include teachings relevant to displaying data, and the Examiner does not contend that it does. As above, the teaching of Wenig relevant to data display is seen to be limited to reproducing web pages as viewed by a user. Yaginuma is the sole reference recited against Issue A, Part A1. By the above argument, Applicant contends that Yaginuma's teachings are limited to displaying polygonal lines that intersect all axes. Neither reference is seen to teach or suggest that there might be valuable information in plotting data that is incomplete vis a vis the display axes (a line that does not intersect all such axes), and therefore no reference teaches or suggests such a display. For at least the above reasons relating to Issue A, Part A1, Applicant/Appellant submits that each and every independent claim is non-obvious over any combination of the references.

Part A2: As to Claim 1, no combination of references teaches or suggests at least one line that terminates at the axis wherein a shopping session ends.

Claim 1 recites in relevant part: "...one or more lines intersecting less than all of the axes and terminating at the axis wherein the at least one said shopping session ends." Claims 3-9, 11-20, and 22 depend from claim 1 and stand or fall with it as to Issue A, Part A2.

This is a more particularized instance of the general aspect argued above in Part A1, in that it recites that the line terminating where the shopping session ends is also the line that does not intersect all axes. For obviousness, a reference that teaches a polygonal line that terminates without intersecting all axes is not sufficient to make claim 1 obvious; such a reference is also required to teach or suggest that the termination point is where the

shopping session ends. An example of a line meeting both claim aspects is line 808 of Exhibit B (Figure 8); the shopping session ends for that user (or group of users) at basket placement axis 804, and the purchase axis 805 is not intersected.

The Office Action cites at page 4 and 6 to Yaginuma Abstract, col. 2, lines 13-43; col. 7, lines 1-11; col. 12, lines 25-27; and Figures 19, 21 and 23 as teaching this aspect (and others related to graphical representation). The abstract includes not text describing a line ending where a shopping session ends. Yaginuma col. 2, lines 13-43 constitute the Summary of the Invention, and do not specifically recite a polygonal line that terminates at the end of a shopping session but generically describes displaying the result of a data mining engine in a graph format. Yaginuma col. 7, lines 1-11 states, "Connecting the data points assigned for each record with a line." There is no indication that the line terminates at the end of a shopping session. Assuming that the underlying data is a shopping session and that the line terminates at the end of the shopping session fails to consider the other portion of the relevant claim clause, that the line in question not intersect all axes. Finally, Yaginuma col. 12, lines 25-27 merely states that the line is drawn so as to reach the point on the axis representing the data mining result. This is seen to relate to the line's vertical crossing point across an axis, such as along the vertical length of axis D of the graph in Figure 19 to which this text relates.

The Office Action further cites to Yaginuma Figures 19, 21, and 23. Figure 19 adds an axis to the graph of Figure 18 (which is itself a reproduction of the automobile search of Figure 6). As Figures 6, 18 and 19 relate to automobile search criteria that are independent of one another (e.g., horsepower, weight, country), it is not seen how this might anticipate terminating a line where a shopping session ends. The shopping session

includes sequential data points in that there must be a precursor step prior to a final step, such as product view before basket placement or basket placement prior to purchase. Automobile search criteria are independent variables, in that they may be displayed in any order (e.g., horsepower-weight-country, or country-horsepower-weight). As such, there does not appear to be a corresponding 'end' to the automobile search criteria as there is an end to a shopping session. Yaginuma gives no particular reason for disposing the "country" axis of Figure 6 in the rightmost position; it represents an independent variable and may be located anywhere on the Yaginuma display.

Respecting Yaginuma Figures 21 and 23, these relate to adding additional axes to the display. No teaching in those figures or related text is seen to describe an "end" of a session or other sequential serial data. Graphing the data of Wenig with the display of Yaginuma does not make obvious the substance of Part A2 on two counts. First, the data of Wenig is a series of server requests and responses so that an analyst may view the identical web pages visited by a user. While this may be sequential data that has a chronological "end", it is not clear how one of ordinary skill would graph a series of web pages themselves on a parallel coordinate system. Second and more fundamental to Part A2, it is not seen that any Yaginuma display of the Wenig data, terminating at the end of a shopping session, would intersect less than all axes. Because Yaginuma's axes represent search criteria (as detailed at Part A1 above), the end of a shopping session would necessarily be the final axis in the display, and the polygonal line would intersect all axes. Applying this reasoning to Figure 8 of the Application (reproduced at Appendix B), a Yaginuma display of Wenig data represented by line 810 would show only three axes (801, 802, and 803), and all polygonal lines of the Applicant's Figure 8 would be displayed, save line 809 since line 809 would fail to satisfy each and every search criteria

of the axes. The display would not illustrate that polygonal lines 808 or 811-814 extended beyond the axis 803, because axis 803 would be the rightmost or terminal axis of the display and axes 804-805 would not exist. Similarly, a Yaginuma display of Wenig data represented by line 812 would show only four axes (801, 802, 803 and 804), and all polygonal lines of the Applicant's Figure 8 would be displayed, save lines 809 and 810, since those lines would fail to satisfy each and every search criteria of the axes. The display would not illustrate that polygonal lines 811 or 814 extended beyond the axis 804, because axis 804 would be the rightmost or terminal axis of the display and axis 805 would not exist. In every instance, setting the termination of the polygonal line to the end of a user session terminates the prior art display at that axis representing the end of the shopping session, and all axes are intersected. Adding a further axis deletes any polygonal line that would not intersect that additional axis, because the underlying data would fail a new data search that included the newly added axis. The prior art necessitates a new search each time a new axis is added.

For at least the above reasons related to Part A2, the Applicant contends that claim 1 is novel and non-obvious over the combination of Wenig and Yaginuma, regardless of the argument in Part A1.

Part A3: As to claim 1, no combination of references teaches or suggests deriving one or more micro-conversions from one or more shopping sessions, the micro-conversion comprising a shopper's conversion from one shopping step to another.

Claim 1 recites in relevant part: "deriving one or more micro-conversions from the one or more shopping sessions, the micro-conversion comprising a shopper's conversion from one shopping step to another;" Claims 3-9, 11-20, and 22 depend from claim 1 and stand or fall with it as to Issue A, Part A3.

Wenig is not seen to teach or suggest deriving a micro-conversion from a shopping session. The Examiner cites at pages 4 and 5 of the Office Action to Wenig, col. 5, lines 3-13, and col. 4, lines 27-40 as disclosing this feature. While Wenig does note at col. 5, lines 8-11 that analysis may be of a user's navigation through a particular application that results in a purchase, it remains that the underlying data captured and stored by Wenig are the user requests and server responses, not a micro-conversion of them. Wenig, at col. 4, lines 27-40, recites that the series of captured and stored requests and responses are stored collectively as a user session. As recited above, Wenig teaches at col. 5, lines 25-39 that the user session is *recreated by generating the identical screens* that were viewed by the user (emphasis added). The present application also characterizes in the Background section at page 2, lines 10-11, that a user session is a series of web pages visited in a single visit. However, Part A3 is not confined only to a user or shopping session, but also includes a micro conversion of that session. The data stored in Wenig that is available for graphical display according to Yaginuma remains the exact web pages visited by a user, not a micro conversion from one shopping step to another even if those web pages visited constitute a shopping session. Yaginuma is not asserted as including teachings relevant to issue B. The underlying data taught in Yaginuma and detailed above does not include virtual paths, online stores, shopping steps, micro conversions, or any similar data. For at least the above reasons, Applicant asserts that claim 1 is novel and non-obvious over any combination of Wenig and Yaginuma.

Part A4: As to claims 15 and 24, no combination of Wenig and Yaginuma teaches or suggests that the line terminates at the point where a potential customer exits without making a purchase.

Claim 15 depends from claim 1 and recites in relevant part: "... the first visualization represents, via dropouts of one or more lines, where the online store loses customers". Claim 24 depends from claim 23 and recites in relevant part "...the line terminates at a point that the one or more potential customers exited the one or more online stores prior to making a purchase." This differs from Part A2 in that for part A2, the shopping session may end at product purchase so long as some other axis (e.g., "complete customer survey" axis) is present that is not intersected by a line. No other claims are within the group under Issue A, Part A4.

The Final Office Action recites at page 10 (which also refers to page 21-23 of that Office Action) that Yaginuma teaches this aspect at Figure 32. Yaginuma Figure 32 is characterized in the attached Appendix C, which plots the polygonal lines of Figure 32 individually given the underlying data of Yaginuma's Figure 27. As above in Part A1, no termination or dropout of the line is seen absent intersection with all Yaginuma axes. The Office Action recites further at pages 21-23 that Yaginuma's display operating on Wenig's data would derive correlations to map appropriate axes where the line would not continue because there is no data to plot where the shopper has terminated their session. No specific reference to Wenig or Yaginuma is given for this assertion, save Yaginuma Figure

32. As in Appendix C and Part A1 above, Yaginuma Figure 32 clearly shows that the polygonal line would intersect all axes of the prior art display.

Assuming arguendo that the Wenig data comprises shopping steps that are displayed as Yaginuma axes, the resulting display would yet show only lines intersecting all displayed axes. Assume Wenig stores shopping step data from customers A-C who make a purchase, and customers D-F who enter the online store but exit prior to making a purchase. Using the axes of the Applicant's Figure 8 (reproduced at Appendix B) assume customer D exits at product impression (line 809), customer E exits at clickthrough (line 810), and customer F exits at basket placement (lines 808, 812 or 813). A user seeking to display that stored data submits criteria as to what data is to be displayed. By Yaginuma's data mining engine, the display depends from the search criteria, and only those customers who satisfy each and every one of the criteria, represented as axes, are displayed. There are necessarily no dropouts prior to intersecting each and every axis of the display. If the user selects axes 801 and 802 (of Applicant's Figure 8), customers A-F will be displayed. If the user then adds axis 803, customer D (line 809) is removed entirely from the revised display because the customer D data fails the user's search criteria. If the user then adds axis 804, customer E is removed entirely from the display.

The Office Action recites at page 21 that Yaginuma is not limited to its disclosed data mining engine. Perhaps true, but that assertion fails to yield the claimed invention absent hindsight. The Examiner's argument appears to be that because it is obvious to store data for customers who enter an online store but fail to complete a purchase, the claimed display is obvious. The references do not support such an assertion. The user may glean the same information by viewing the multiple displays noted in the above paragraph (e.g.,

a first display with axes 801-802 only, a second display with axes 801-803 only, a third display with axes 801-804 only, and a fourth display of completed purchases with axes 801-805). Claims 15 and 24 put data for customers who leave the online store at one non-purchase point in the same display as other customers who leave at another later point. Preferably but not necessarily, that later point is purchase completion. The references teach or suggest no data mining engine that returns data for customers who leave at a non-purchase interim step or axis and also that returns data for customers who leave at a final axis (where the final axis may or may not be purchase). This is because every data mining engine or display of the cited references teaches that the axes represent search criteria, only data that satisfies each and every search criteria is returned for display, and there is no teaching or suggestion that valuable information may be obtained by displaying data that satisfies only some of the search criteria. That the claimed display strikes a reader as a particularly valuable way to display data does not render its subject matter within prior art that teaches away.

Part A5: As to claims 23 and 36, no combination of Wenig and Yaginuma is seen to teach or suggest using a network to send data relating to a virtual path through an online store or to provide a customer the graphical representation.

Claim 23 recites in relevant part "...receiving over a network data relating to a virtual path that one or more potential customers followed through one or more online stores". Claim 36 depends from claim 30 and recites in relevant part "...wherein the graphical display is provided to the user over a network". Claims 24-29 depend from claim 23, and stand or fall with that claim as to Issue A, Part A5.

The Office Action does not specifically address either the above aspect of claim 23, or the entirety of claim 36. Neither Wenig nor Yaginuma is seen to teach or suggest providing the specifically claimed virtual path data over a network. The Applicant/Appellant asserts that it has not been shown where or how the references, alone or in combination, teach or suggest this aspect of these claims, and that the Patent Office has not met its minimum burden of establishing a prima facie case for obviousness.

Issue A6: As to claims 28 and 35, no combination of references is seen to teach or suggest a filter that changes the graphical representation based on hierarchical browsing, keyword search, parametric search, or recommendations.

Claim 28 depends (through intervening claim 27) from claim 23, and claim 35 depends from claim 30. These claims stand or fall together only as to Issue A, Part A6.

Claim 28 recites in relevant part: "...the filter dynamically changes the graphical representation based on at least one of the following aspects of the virtual path: hierarchical browsing, keyword search, parametric search, and recommendations". Claim 35 recites almost identically.

As recited in the written description at page 12, lines 10-13, these specific filters relate to different methods used by shoppers to find products and information in the online store. The "keyword search" filter then returns data for shoppers who used a keyword search to find a product, and may be generic (e.g., all data where shoppers searched for product X

via a keyword search) or specific (e.g., all data where shoppers searched for product X using keyword "jacket" or "coat" or "outerwear"). These claims make this shopper-centric aspect clear in reciting "aspects of the virtual path".

The Office Action recites at page 12 that this is taught by Yaginuma at Figures 1-4. Those drawings are generic block and flow diagrams showing broad aspects of the Yaginuma data mining engine, and are not seen as particularly relevant to filtering the data by shopper-centric aspects of a virtual path through an online store. The Applicant/Appellant asserts that it has not been shown where or how the references, alone or in combination, teach or suggest this aspect of these claims, and that the Patent Office has not met its minimum burden of establishing a prima facie case for obviousness.

ISSUE B. OBVIOUSNESS OF CLAIMS 5, 12, 13, AND 17 BY WENIG AND YAGINUMA WITH HUNT:

As to Claims 12-13 and 17, no combination of references teaches or suggests a categorizer axis.

It is noted that claims 3, 8, and 13 are rejected under the combination of Wenig, Yaginuma, and Hunt, whereas claims 12-13 and 17 are argued under Issue B. As each of claims 12-13 and 17 are argued for patentability as to a recited categorizer axis, they are argued under Issue B together for that common aspect.

Dependent claims 12-13 and 17 each depends from claim 1 through various intervening claims, and each recite a categorizer axis. The present application describes at page 7, lines 15-22, a categorizer axis as an axis in addition to shopping step axes that classifies sessions of the clickstream data, such as by referring websites by which the customers first began their online store virtual path.

The Office Action asserts that, for claim 12, Yaginuma teaches the categorizer axis at col. 5, lines 63-67; and at Figures 1-6 and 19. None of these are seen to teach a categorizer axis. The cited text describes generically converting data returned from a database search to a graphical display. Yaginuma Figures 1-6 depicts independent database search criteria for an automobile, such as fuel consumption and horsepower. Figure 19 of Yaginuma depicts adding an axis to the Yaginuma display, and is not directed to categorizing the data by an axis. Wenig is not cited as relevant to this particular claim aspect.

The Office Action asserts at page 14-15 that for claim 13, Hunt teaches (at col. 2, lines 8-20; col. 5, lines 47-65; and Figure 3) a categorizer that includes referrer websites of sessions and Internet service providers of sessions. Hunt is directed to a method for interactive network session tracking that associates a session ID with a user's inbound source (Hunt, abstract). The most relevant teaching appears to be at col. 2, lines 9-20, recite storing in a database a session ID, the user's origin (such as a unique source ID of an advertising banner), and user actions such as page views and product detail views. Hunt is not seen to teach graphically displaying the data.

No combination of Wenig, Yaginuma, or Hunt, alone or in combination, is seen to teach or suggest a display that includes a categorizer axis and axes representing shopping steps,

where a line representing a shopper's session intersects some but not all axes. This is at least because the categorizer axis represents a different data type than the shopping steps, data that the user/online store operator cannot control because it is beyond that online store. Whereas Hunt may associate shopping session IDs with an advertising banner source for that shopping session, Hunt does not teach or suggest displaying any of that data, only capturing and storing it. The only display of the references is Yaginuma, and it is not seen how Yaginuma teaches displaying on the same graphical display data of different types.

While the Amendment After Final Rejection dated August 20, 2004 is not made of record, that paper includes an interview summary in which the Examiner is reported as reciting that a different underlying database on which Yaginuma operates would result in the claimed invention. The Applicant/Appellant has shown by Appendix C that Figure 32 of Yaginuma does not teach or suggest the claimed matter, which the Applciant/Appellant asserts is sufficient to overcome the objection. If indeed Yaginuma operating on a more tailored database could be shown to teach or suggest the claimed matter, Applicant/Appellant requests the Patent Office to assume such a database arguendo, and produce the claimed display in its Brief without departing from the explicit teachings of Yaginuma or obvious variants thereof.

For at least the above reasons, the Applicant/Appellant contends that the combination of Wenig, Yaginuma, and Hunt do not, alone or in combination with one another, does not render obvious any of the claims, and especially the claims specifically argued above. The Applicant/Appellant respectfully requests the Board reverse the final rejection in the

(9) APPENDIX A

Listing of Claims:

1.(Previously Presented) A method of graphically representing clickstream data of a shopping session on a network comprising:

extracting one or more shopping sessions from one or more Web server logs of one or more Web server systems of one or more online stores;

deriving one or more micro-conversions from the one or more shopping sessions, the micro-conversion comprising a shopper's conversion from one shopping step to another; and

graphically representing clickstream data from one or more micro-conversions in a first visualization, the first visualization comprising at least three axes representing shopping steps and one or more lines that each correspond to at least one said shopping session, at least one of the one or more lines intersecting less than all of the axes and terminating at the axis wherein the at least one said shopping session ends.

2.(Cancelled)

3.(Previously Presented) A method, as in claim 1, where the shopping steps include a product impression that is a view of a hyperlink to a Web page presenting one of a product and service, a clickthrough that is a click on the hyperlink and view of the Web page, a basket placement that is a placement of the one of the product and service in a shopping basket, and a purchase that is a purchase of the one of the product and service.

4.(Previously Presented) A method, as in claim 1, where the clickstream data is a collection of micro-conversions of one or more shoppers for at least one of products and services sold in at least one online store.

5.(Previously Presented) A method, as in claim 1, where the first visualization comprises a parallel coordinate system and one or more extension components including one or more parallel axes of sequential events, one or more dependent variable values of

timestamps, one or more filters, one or more categorizers, and one or more hyperlink associations.

6.(Previously Presented) A method, as in claim 5, where the parallel coordinate system comprises a series of parallel lines that are placed equidistantly, each parallel line representing a specific dependent variable and dependent variable values being plotted along a respective axis, and an independent variable that is represented by polygonal lines connecting the corresponding dependent variable values.

7.(Previously Presented) A method, as in claim 5, where the parallel axes of sequential events is an assignment of a series of sequential events to parallel lines in a parallel coordinate system.

8.(Previously Presented) A method, as in claim 7, where the sequential events include at least one of the following: one or more steps of shopping in one or more stores, one or more product development steps, and one or more service development steps.

9.(Previously Presented) A method, as in claim 5, where the dependent variable values of timestamps is an assignment of timestamp values as data points to a series of sequential events that are assigned to the equal number of parallel axes in a parallel coordinate system.

10.(Cancelled)

11.(Previously Presented) A method, as in claim 5, where the filter is a means to select one or more groups of polygonal lines viewed in the parallel coordinate system.

12.(Previously Presented) A method, as in claim 5, where the categorizer is a parallel axis in the parallel coordinate system for categorizing polygonal lines in the system.

13.(Previously Presented) A method, as in claim 12, where the categorizer includes at least one of the following: referrer Web sites of sessions, internet service providers of sessions, lengths of sessions, methods used to find product information by session,

methods used to find service information by sessions, products viewed, services viewed, items placed in a shopping cart, items purchased by sessions, time points of sessions, geographic regions where sessions originate, age, sex, education, and income of session originators, sales history of owners of sessions, and Web page patterns accessed by one of sessions and owners of sessions.

14.(Previously Presented) A method, as in claim 5, where the hyperlink association is association of at least one hyperlink with the line representing a session, and the line comprises a hyperlink to a Web page that provides additional information of the session.

15.(Previously Presented) A method, as in claim 1, wherein at least the first visualization represents, via dropouts of one or more lines, where the online store loses customers.

16.(Previously Presented) A method, as in claim 22, wherein the at least one alternate visualization comprises a filter for selecting at least one group of sessions.

17.(Previously Presented) A method, as in claim 22, wherein the at least one alternate visualization comprises sessions of different shoppers categorized by one or more values of a categorizer axis, as compared to the first visualization.

18.(Previously Presented) A method, as in claim 1, further comprising displaying additional information of one or more sessions on at least one Web page by using at least one hyperlink association

19.(Previously Presented) A method, as in claim 22, further comprising displaying a stored visualization representing a first time and a stored visualization representing a second time.

20.(Previously Presented) A method, as in claim 22, further comprising modifying at least one of Web design, navigation paths of the online store, advertisement banners, product layouts, service layouts, marketing and merchandising based on at least one of the visualizations.

21. (Cancelled)

22.(Previously Presented) The method of claim 1 further comprising:

graphically representing one or more variations of the clickstream data in at least one alternate visualization in response to a request;

storing at least one of the first and the alternate visualizations in at least one computer memory;

retrieving at least one of the first and the alternate visualizations from the at least one computer memory; and

graphically comparing at least two of the first and the alternate visualizations retreived from the at least one computer memory.

23.(Previously Presented) A method of doing business on a network comprising:

receiving over a network data relating to a virtual path that one or more potential customers followed through one or more online stores; and

as part of a business transaction, providing a user with means to visualize the virtual path, wherein the means to visualize comprises a graphical representation of the virtual path as a line that intersects axes representing steps along the virtual path, the line terminating prior to intersecting all of the axes.

24.(Previously Presented) The method of claim 23 wherein the line terminates at a point that the one or more potential customers exited the one or more online stores prior to making a purchase.

25.(Previously Presented) The method of claim 23 further including:

receiving over the network data relating to a second virtual path that one or more other customers followed through one or more online stores; wherein the means to visualize further comprises a graphical representation of the second virtual path as a second line that intersects all of the axes.

26.(Previously Presented) The method of claim 23 wherein the graphical representation further comprises a hyperlink associated with the line that links to a Web page for displaying additional information of the virtual path.

27.(Previously Presented) The method of claim 23 further comprising providing the user with one or more filters by which to dynamically change the graphical representation.

28.(Previously Presented) The method of claim 27 wherein the filter dynamically changes the graphical representation based on at least one of the following aspects of the virtual path: heirarchical browsing, keyword search, parametric search, and recommendations.

29.(Previously Presented) The method of claim 23 wherein the graphical representation is provided to the user over a network.

30.(Previously Presented) A system that operates to provide a service to a user, the service comprising providing a graphical display of clickstream data received over a network, the clickstream data representing a virtual path that one or more third parties followed through the internet, the graphical display comprising axes that represent points along the virtual path and a line that represents the virtual path that is plotted against the axes but that crosses less than all of the axes.

31.(Previously Presented) The system of claim 30 wherein one of the axes represents product purchase and the line terminates prior to crossing the product purchase axis.

32.(Previously Presented) The system of claim 30 wherein the clickstream data further represents a second virtual path that a separate one or more third parties followed through the internet, and wherein the means to visualize further comprises a graphical representation of the second virtual path as a second line plotted against the axes.

33.(Previously Presented) The system of claim 30 wherein the graphical display further comprises a hyperlink associated with the line that links to a Web page for displaying additional information of the virtual path.

34.(Previously Presented) The system of claim 30 wherein the service further comprises providing one or more filters that may be used to dynamically change the graphical display.

35.(Previously Presented) The system of claim 34 wherein the filter dynamically changes the graphical display based on at least one of the following aspects of the virtual path: heirarchical browsing, keyword search, parametric search, and recommendations.

36.(Previously Presented) The system of claim 30 wherein the graphical display is provided to the user over a network.

END OF CLAIMS

OIPE
DEC 1 3 2004
PATENT & TRADEMARK OFFICE

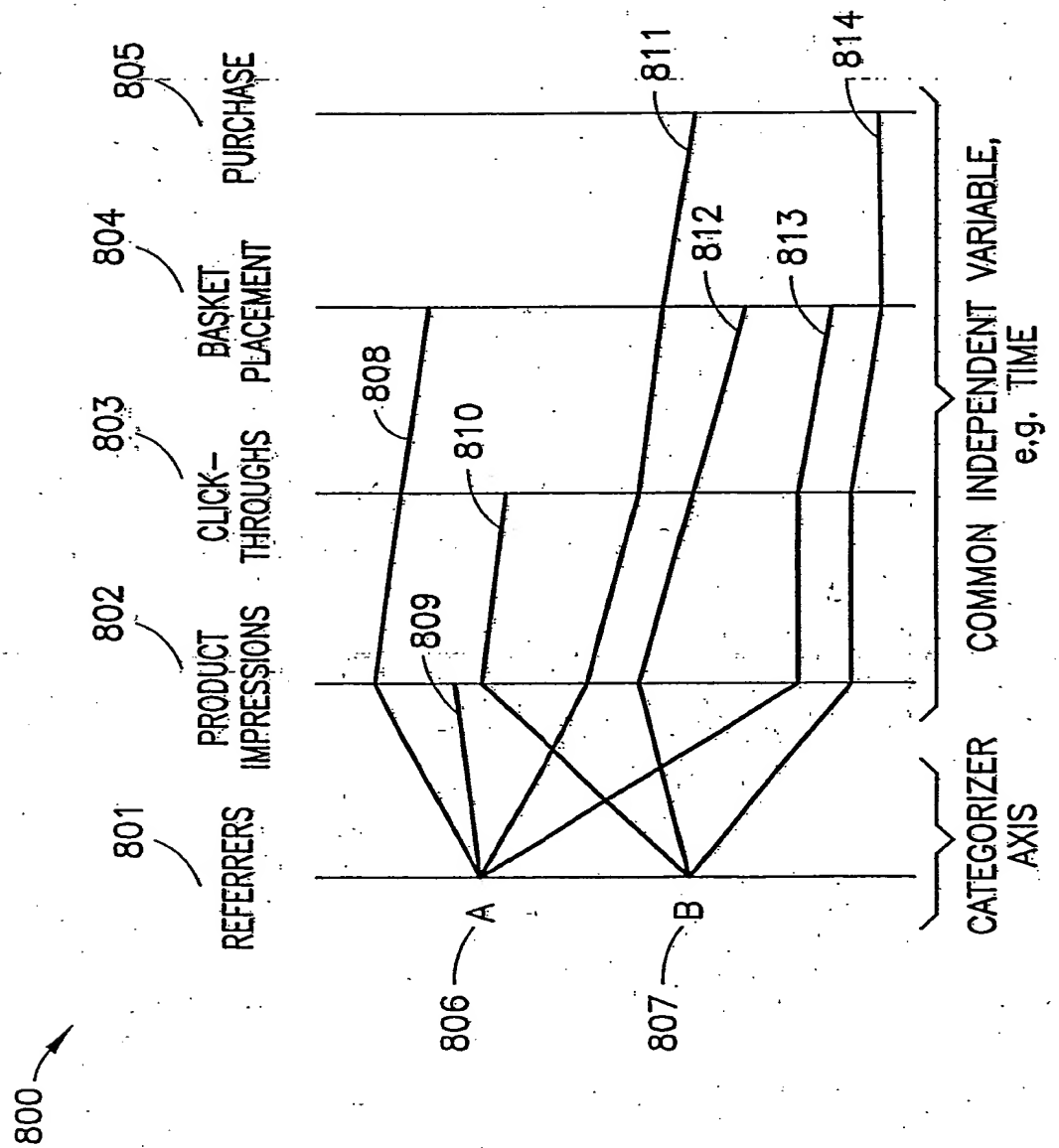
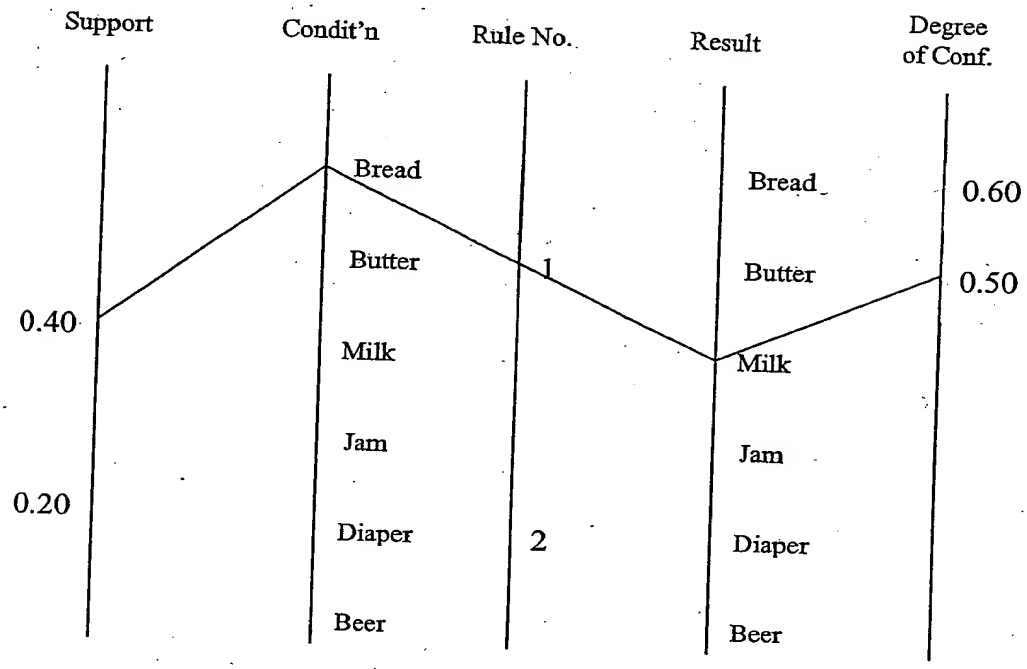


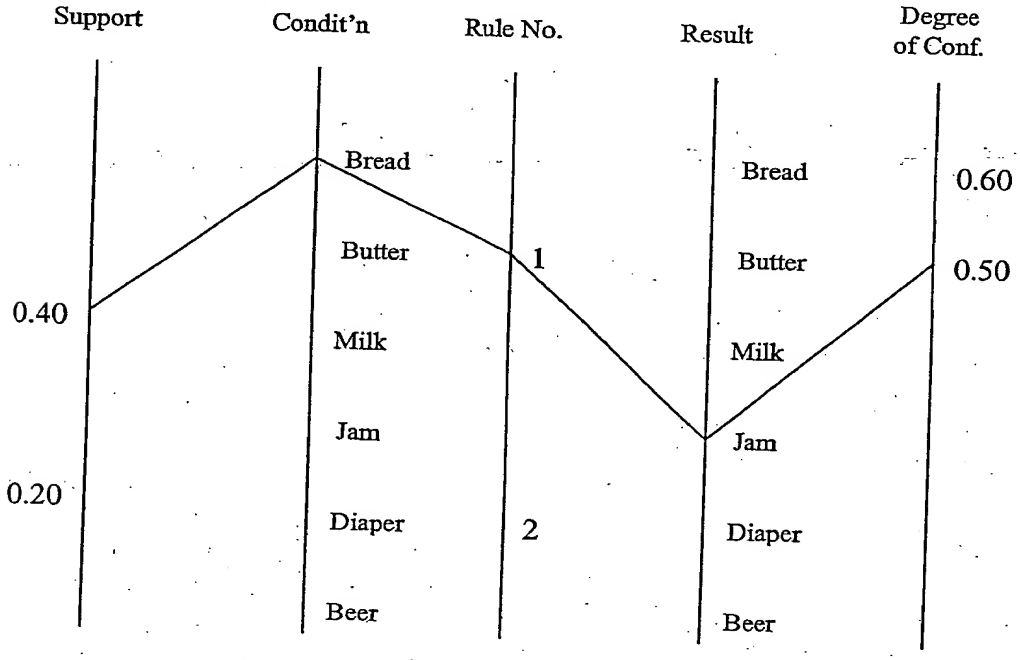
FIG.8

OIPE
DEC 1 3 2004
PATENT & TRADEMARK OFFICE

First data line of Yaginuma Figure 27

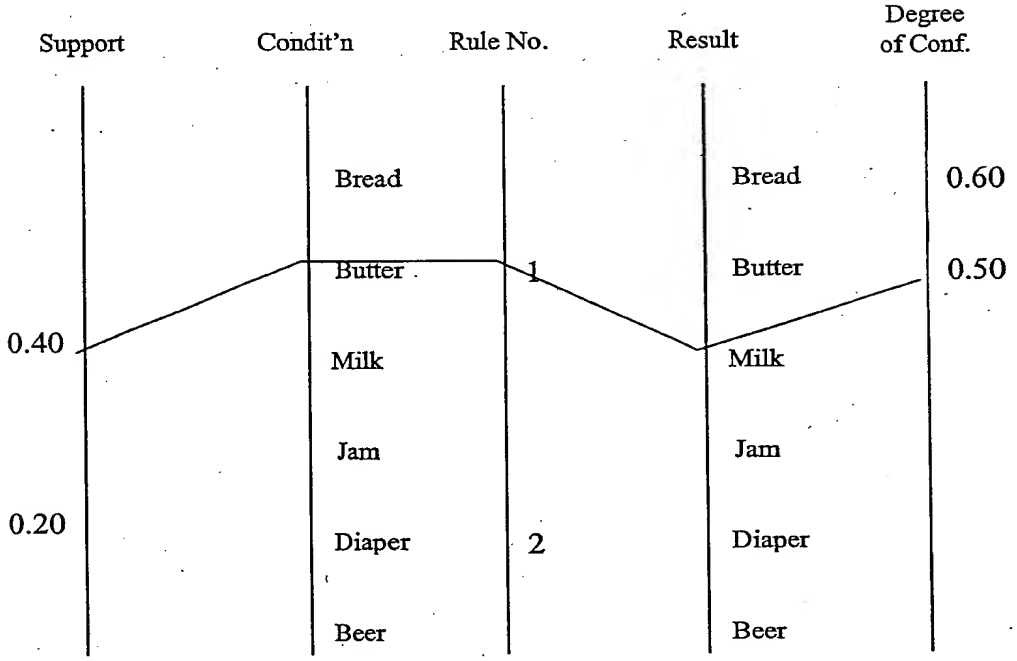


Second data line of Yaginuma Figure 27

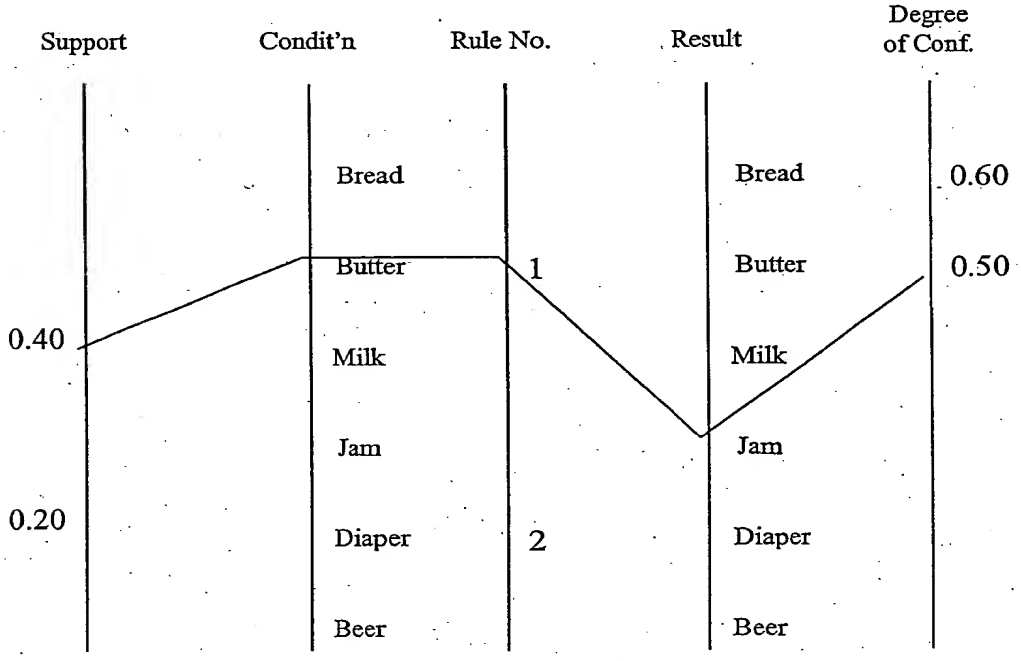


OIPE
DEC 1 3 2004
PATENT & TRADEMARK OFFICE

Third data line of Yaginuma Figure 27

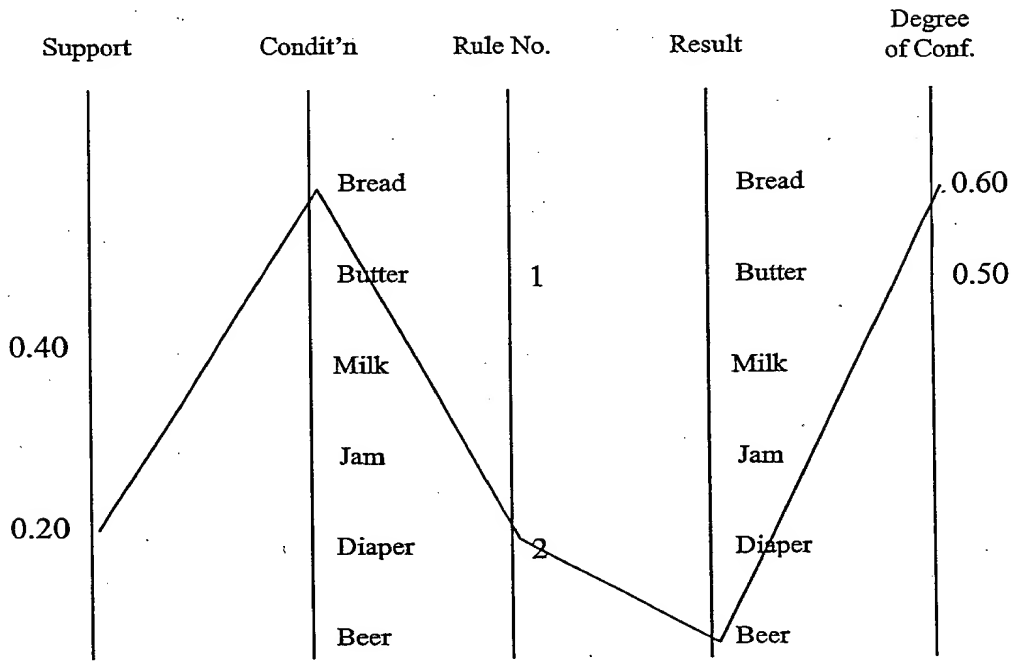


Fourth data line of Yaginuma Figure 27



OIPE
DEC 1 3 2004
PATENT & TRADEMARK OFFICE

Fifth data line of Yaginuma Figure 27



Sixth data line of Yaginuma Figure 27